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Glenn Brown
Executive Director-
Public Policy

EX PARTE OR LATE FILED

U S WEST

August 28, 1997

RECEIVED

AUG 28 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, NW
Room 222
Washington, DC 20554

RE: CC Docket 96-45

Dear Mr. Caton:

On August 27, 1997 Mr. James Stegeman of INDETEC International made a presentation to the Universal Service Joint Board Staff regarding planned enhancements in the customer location algorithm of the Benchmark Cost Proxy Model. A list of the persons attending the presentation, both in person and via teleconference is attached to this letter. Also attached is a copy of the materials used during Mr. Stegeman's presenatition. Since this meeting occurred late in the day, this letter is being filed the following business day.

In accordance with Section 1.1206(a)(2) of the Commission's rules the original and one copy of this letter are being filed with your office.

Acknowledgment and date of receipt of this data are requested. A duplicate of this letter is included for this purpose. Please contact me should you have any questions concerning this matter.

Sincerely,

Attachments

No. of Copies rec'd 0+1
List ABCDE

Ex-Parte Presetation by Mr. James Stegeman
August 27, 1997
Attendance List

IN PERSON:
Jim Sichter, Sprint
Glenn Brown, USW
Brad Wimmer, FCC
Ire Geldziler, Bell Atl
Ed Barber, Bell Atl
Bill Sharkey, FCC
Patrick Brogan, Legg Mason Precursor Group
Chris Frentrup, MCI
Gary B. Allen, RUS
Ed Cameron, RUS
Scott Randolph, GTE
Warren Hannah, Sprint
Victor Glass, NECA
Bob Loube, FCC
Chris Antis, PNR
Mark Askins, Sprint
Patrick Liles, Tracer
Natalie Wales, FCC
Whit Jordan, BellSouth
Brian Staihr, Sprint
Jim Stegeman, Indetec
Richard Clarke, ATT
Chuck Keller, FCC
Vin Callahan, Bell Atl
Bryan Clopton, FCC
David Porter, WorldCom

BY PHONE
Bridget Duff, Fla PSC
Charlie Bolle, SD PSC
Rowland Curry, TX PUC
Ann Dean, MD PSC
Barry Payne, IN Ofc. of Consumer Counsel
Brian Roberts, CA PUC
John Schrotenboer, SBC
Ron Wheatley, Mass Dept of Public Util
Jason Hendricks, Illinois Commerce Comn
Paul King, Teleport Telecom. Group
Milan Holy, Ameritech
Harry Albright, Ameritech
Joel Schiffman, Maine PUC
David Gabel, Queens College, City U of NY
Mark Bryant, MCI
Peter Copeland, U S WEST
Debra Guest, U S WEST
Audrey Curtiss, INDETEC

BCPM Enhanced Customer Location

FCC Overview

Presented by:

BellSouth, Sprint, U S West, and INDETEC International

August, 27, 1997

BCPM Enhanced Customer Location

- Data from Enhanced BCPM Will Address Many Noted Concerns and Deficiencies About Existing Proxy Models
  - CBG Is Not the Ideal Engineering Unit for Rural Areas nor Rural Companies
    - Too Large
    - In Algorithms ,Information is Lost in BCPM1.1 and Hatfield Due to "Squaring" of CBG Area
    - Lack of Identification of Actual Customer Location
      - Clustering
      - Empty Areas
    - General Assumptions of Customer Dispersion and Engineering Do Not Work Well in Costing Specific Areas
      - Equal Dispersion versus Clustering
      - Limited Lot Size

BCPM Enhanced Customer Location

- Data from Enhanced BCPM Will Address Many Noted Concerns and Deficiencies About Existing Proxy Models
  - Current BCPM1.1 & Hatfield Wire Center Boundaries Defined Only at Census Block Group Level
    - Tends to Miss-Assign Customers and Subsidy Funding to
      - Wrong Wire Center
      - Wrong Company
    - Incorrectly determines
      - Cable Lengths
      - Investments
      - Costs

Any Representation of data for illustrative purposes only.

BCPM Enhanced Customer Location

- Expected Changes in BCPM Data
  - Improved Wire Center Boundaries
    - Match at the Census Block
  - Finer Level of Input Data
    - Input at the Census Block or Even Lower Level
      - Census Data for Residential Customers, Business Data, Terrain, Housing Unit Data
  - Data Is Partitioned Into Variable Size Grids
    - "Dynamic" Routine
    - Uses Finer Input Data Along With Road Network Information
  - Improved Engineering Based Upon Specific Grid Information
    - "Intelligent" Feeder Plant
    - "Floating" Quadrants for Distribution Plant

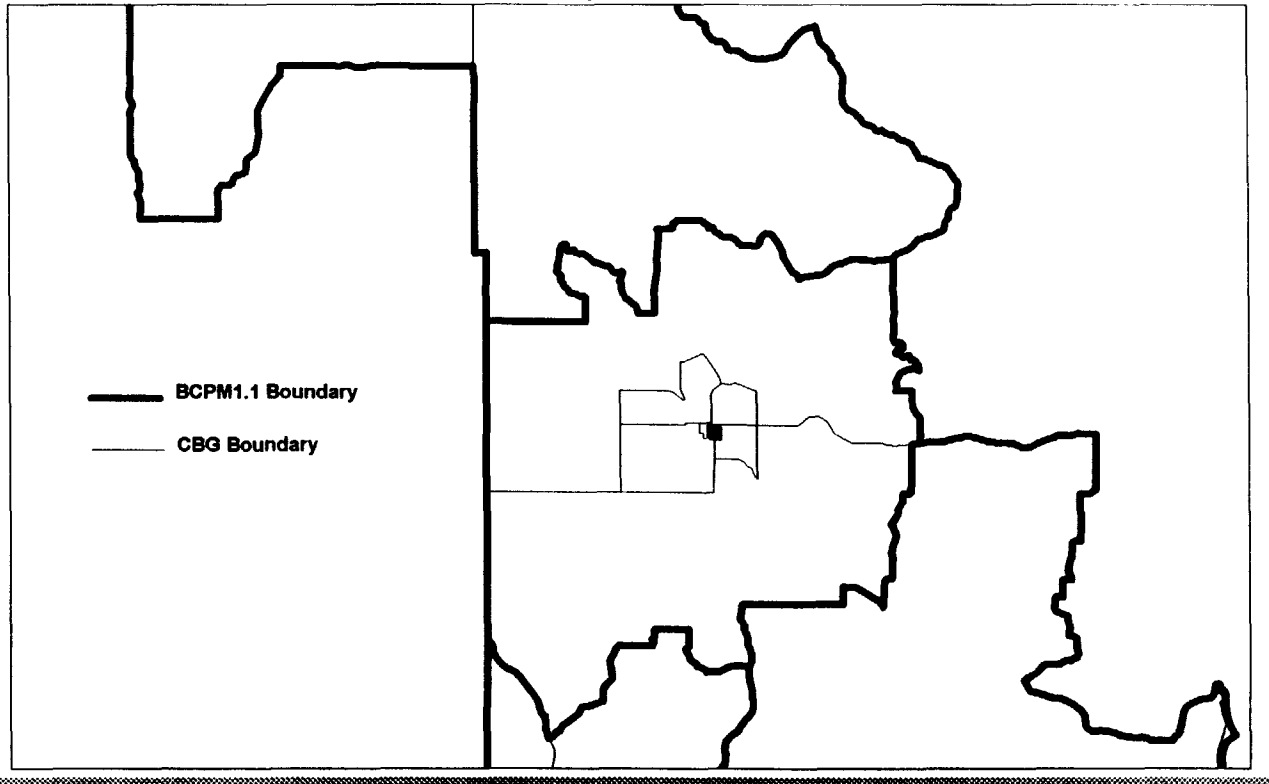
BCPM Enhanced Customer Location

- Improved Wire Centers
  - Based Upon BLR Wire Center Premium Package Data
  - Defined at the Census Block Boundary (Not CBG)
  - Improves Assignment of Customers and Subsidy Funding
    - To Correct Wire Center
    - To Correct Company
  - Improves Calculation of
    - Cable Length
    - Investment
    - Cost

Any Representation of data for illustrative purposes only.

BCPM Enhanced Customer Location

- Improved Wire Centers
  - BCPM1.1 Data for Waukon, Iowa



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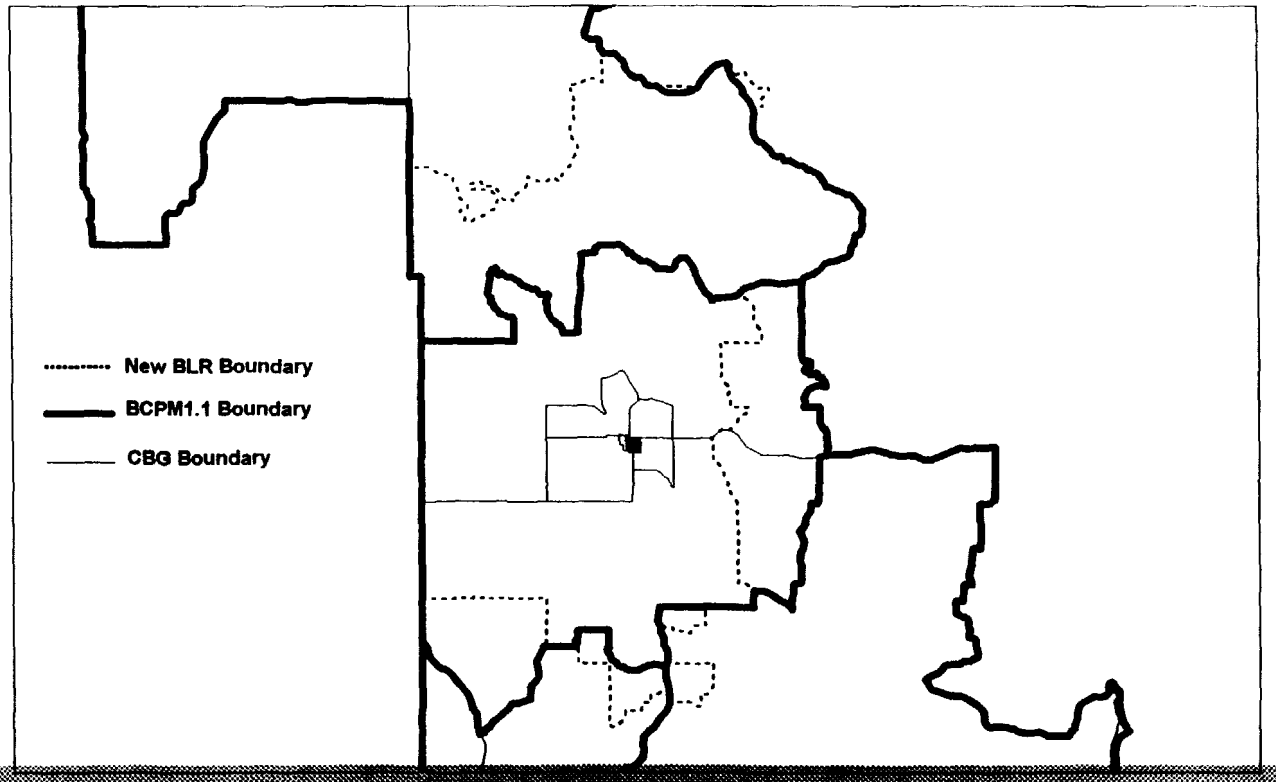
BCPM Enhanced Customer Location

- Improved Wire Centers
  - Overlay of New BLR Wire Center Boundary for Waukon, Iowa



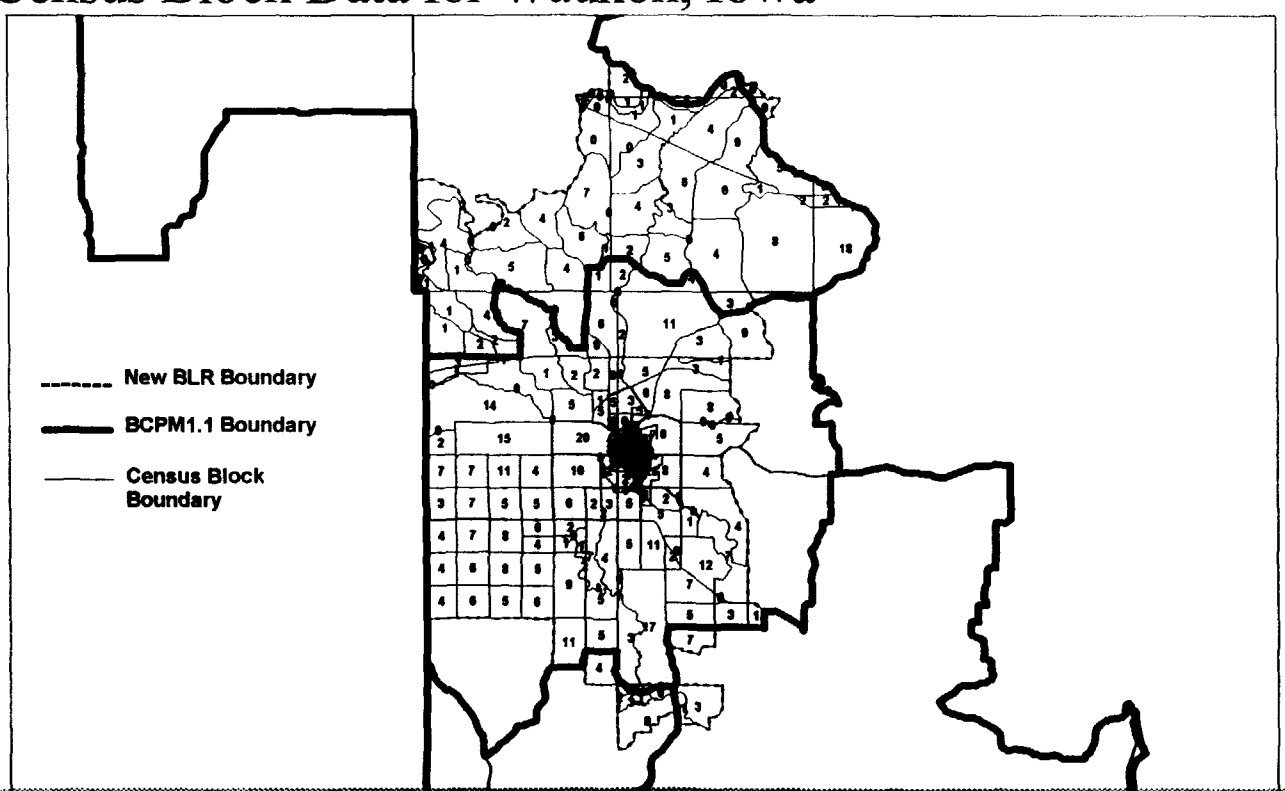
Any Representation of data for Illustrative purposes only.

BCPM Enhanced Customer Location

- Finer Level of Input Data
  - We Will Be Using Census Block Data (Not CBG)
    - Housing Units
    - Households
    - Housing Unit Detail
      - Multifamily
  - We Are Planning on Using PNR Business Data
    - At the Census Block Level
  - Terrain Information Will Be Calculated at the Grid Level
    - Soil Type, Rock Hardness, Water Table Depth, Bedrock Depth, Slope

BCPM Enhanced Customer Location

- Finer Level of Input Data
  - Census Block Data for Waukon, Iowa



Any Representation of data for illustrative purposes only.

BCPM Enhanced Customer Location

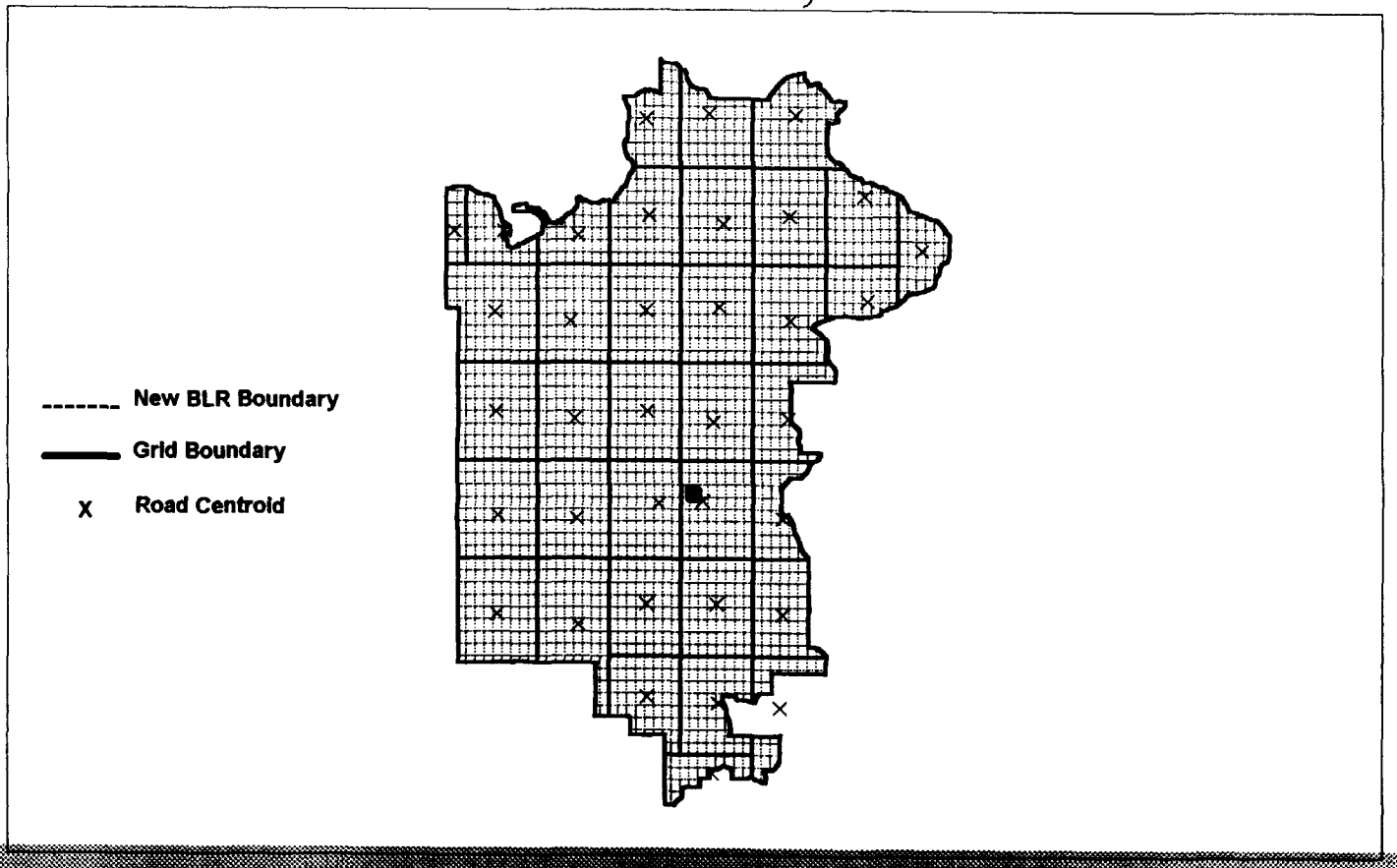
- Census Data Is Partitioned Into Variable Size Grids
  - Addresses the Recognized Deficiency of Using CBGs As the Engineering Unit in Rural Areas
  - Uses Real Data on a Grid by Grid Basis to
    - Identify Clustering
    - Identify Customer Locations
    - Identify Empty Areas
  - An Overview of the Approach Is Attached

BCPM Enhanced Customer Location

- Data Is Partitioned Into Variable Size Grids
  - In General, Grid Will Vary in Size to Mimic Engineering CSA/DA (Carrier Serving Area/Distribution Area) Architecture
    - In Town, the Grid Can Be As Small As ~1500Ft * 1700Ft
    - In the Rural Area, the Grid Will Increase in Size up to a Maximum Area of ~12,000Ft * 14,000Ft
    - Within the Larger Grids, Data Will Be Retained to Identify the Unique Characteristics of Each Quadrant Within the Grid
  - Permits Analyst to Depict an Efficient Network Design
    - Minimizes the Potential to Either Overbuild or Underbuild

BCPM Enhanced Customer Location

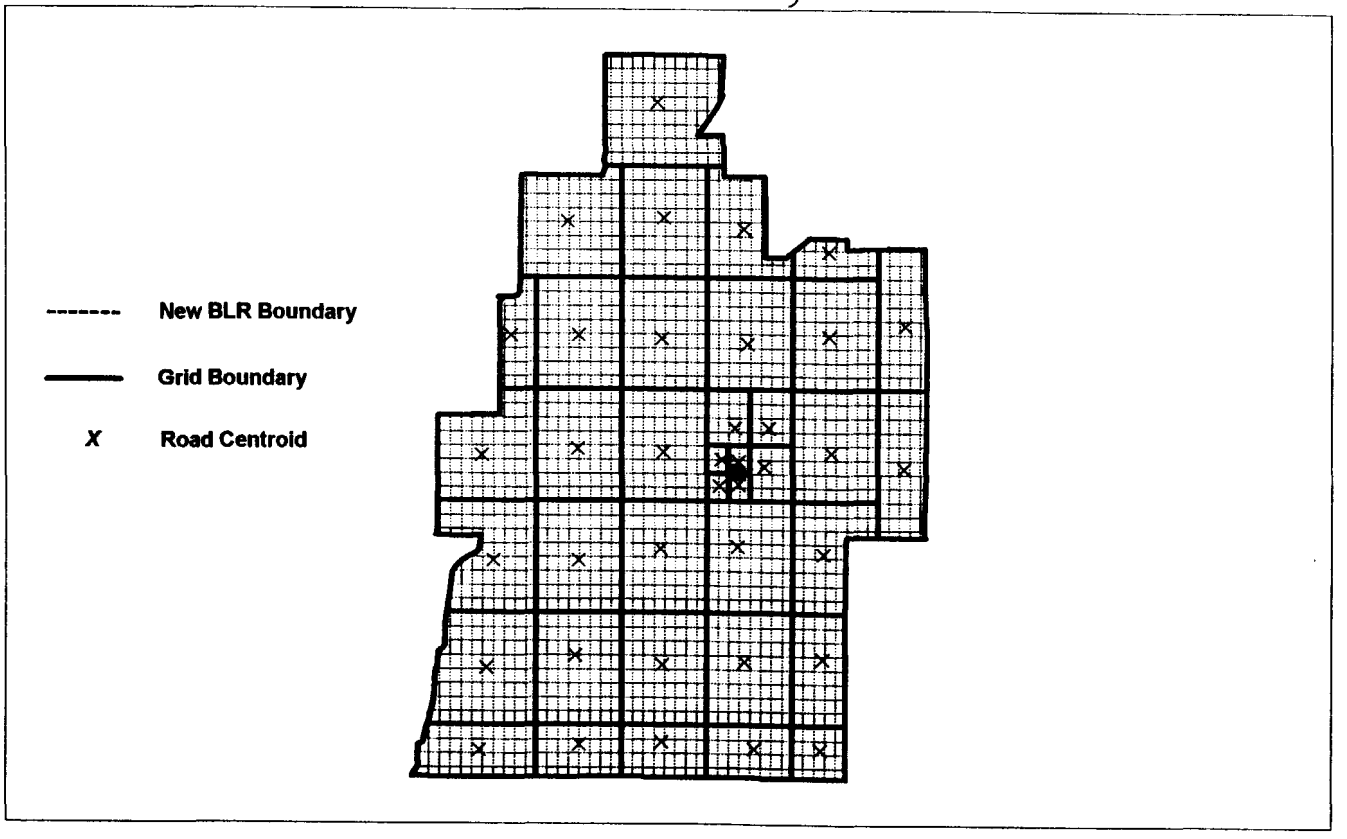
- Variable Size Grids for Waukon, Iowa



Any Representation of data for illustrative purposes only.

BCPM Enhanced Customer Location

- Variable Size Grids for Red Oak, Iowa



Any Representation of data for illustrative purposes only.

BCPM Enhanced Customer Location

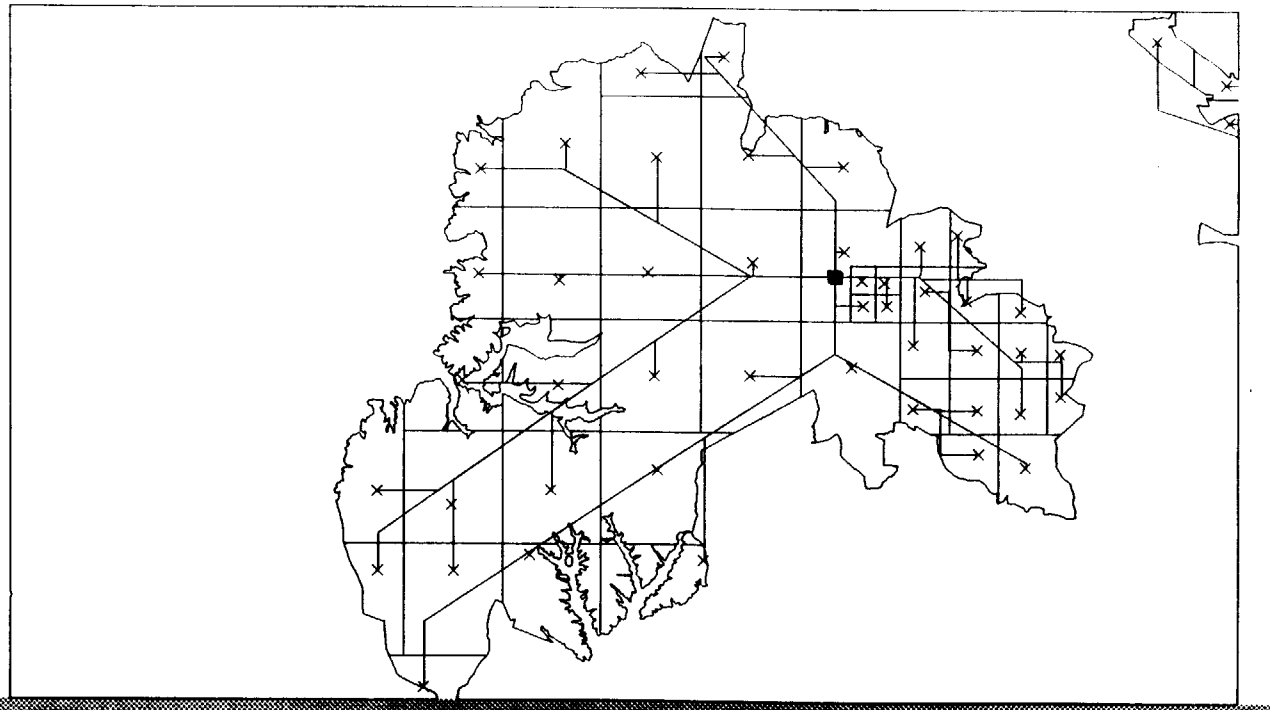
- Improved Engineering Based Upon Specific Grid Information
  - Maximum Size of Grid was developed to Limit the Length of the Copper Distribution
    - Complies With Standard Engineering Practices
    - Ensures the Designed Network will Meet Expected USF Service Specifications
  - Road Centroid of Grid Is Location of DLC and/or FDI
    - Should Minimize Distribution Plant

BCPM Enhanced Customer Location

- Improved Engineering Based Upon Specific Grid Information
  - Feeder Plant
    - Feeder Will Not Necessarily Run Straight North, East, South, and West Routes
      - Main Feeder Will Run to Population Centers
      - Main Feeder May Split in Two to More Efficiently Serve the Grids
    - Subfeeder Will Be Shared Wherever Possible

BCPM Enhanced Customer Location

- Improved Engineering Based Upon Specific Grid Information
  - Feeder Plant



Any Representation of data for illustrative purposes only.

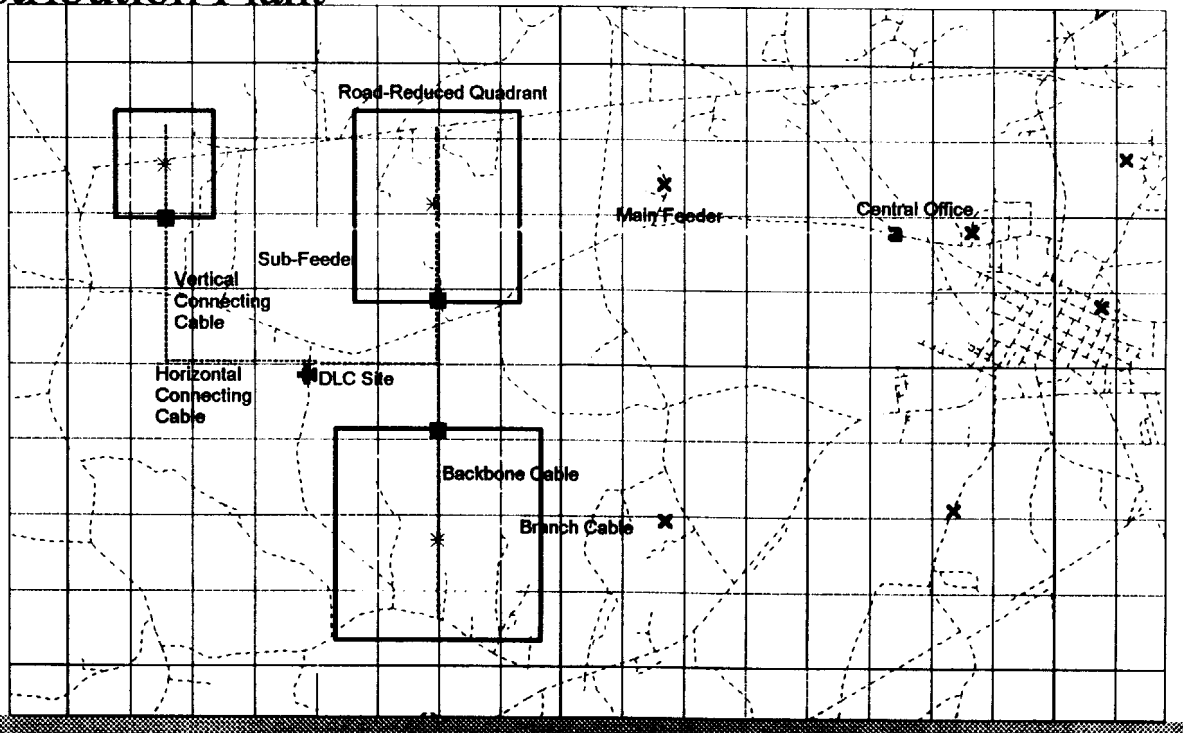
BCPM Enhanced Customer Location

- Improved Engineering Based Upon Specific Grid Information
  - Distribution Plant
    - Will Use Quadrant Data that Recognizes Actual
      - Dispersion / Clustering
      - Empty Areas
    - Uses a "Floating" Square in Each Quadrant
      - Size of Square Based on Road Length in Each Quadrant
      - Square is Centered on the Quadrant's Road Centroid
    - To Simplify Review and Understanding, We Have Adopted the Hatfield Naming Convention in the Distribution Area
      - Vertical and Horizontal Connecting Cables, Backbone and Branch Cables

Any Representation of data for illustrative purposes only.

BCPM Enhanced Customer Location

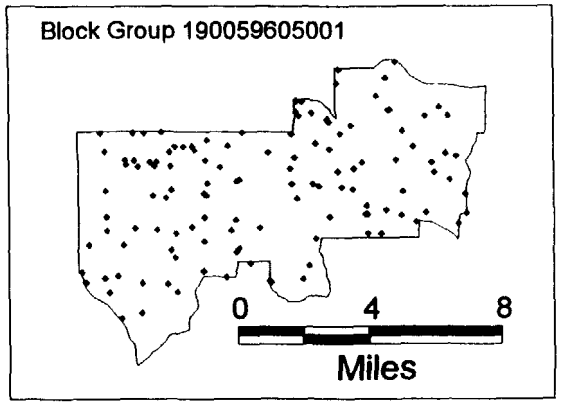
- Improved Engineering Based Upon Specific Grid Information
  - Distribution Plant

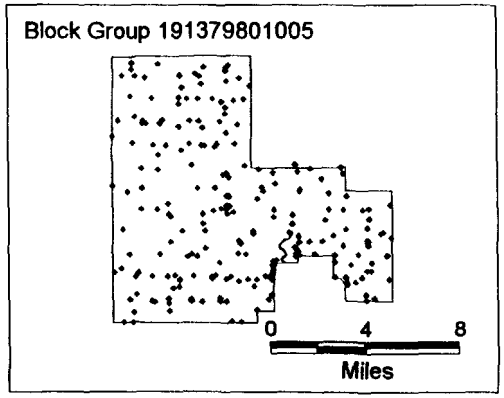


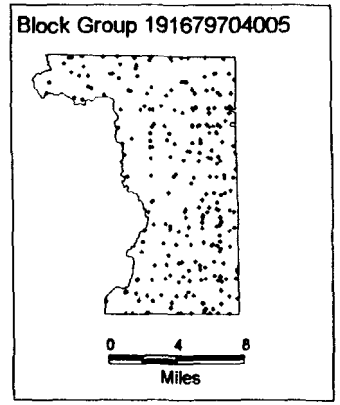
Any Representation of data for illustrative purposes only.

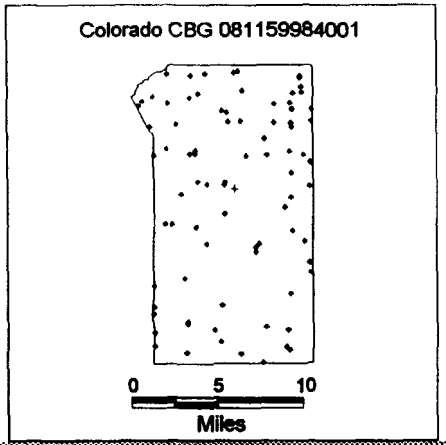
BCPM Enhanced Customer Location

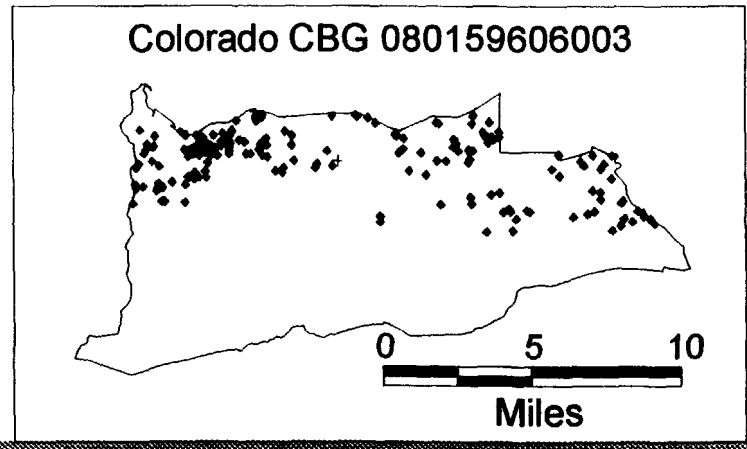
- Digitized Satellite Map Data for Random CBGs with Density < 5/sqmi

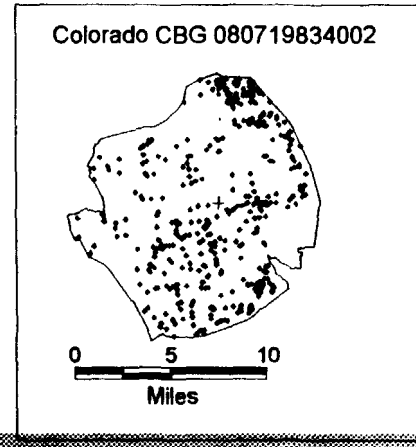












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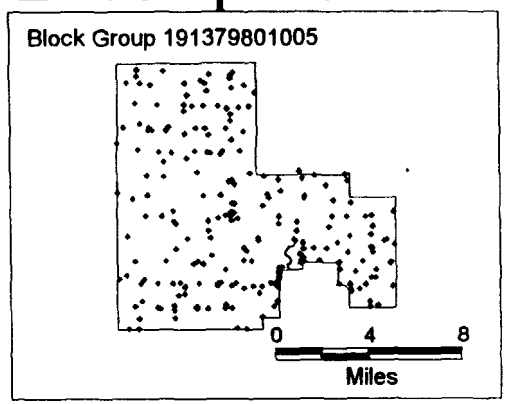
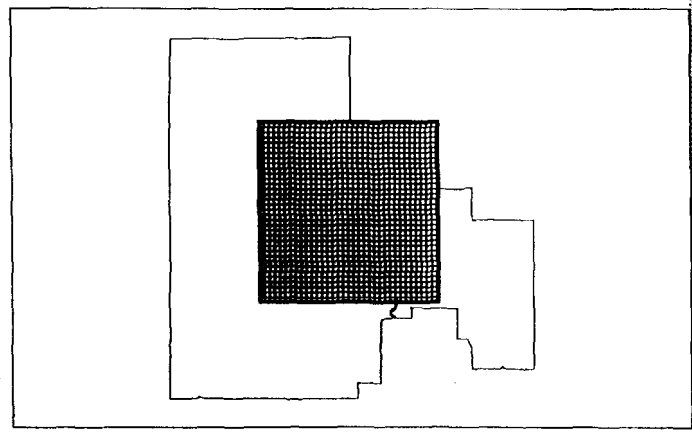
BCPM Enhanced Customer Location

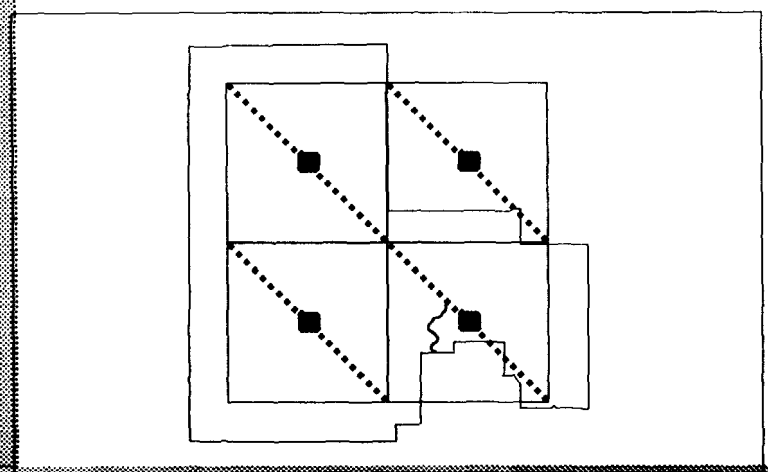
- Comparison of BCPM1.1, HM3.1, And Enhanced BCPM



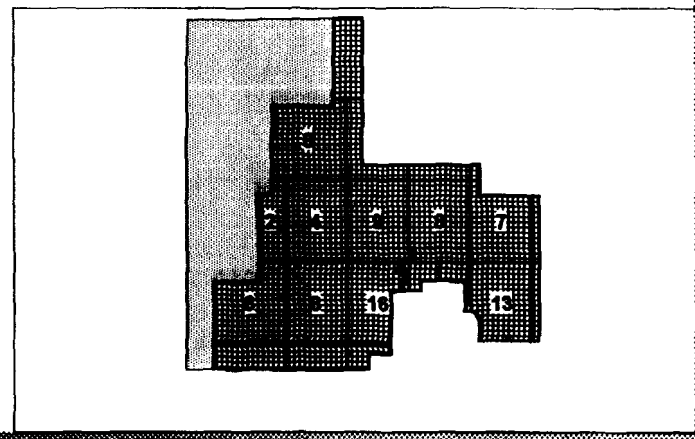
Satellite



BCPM1.1



Hatfield

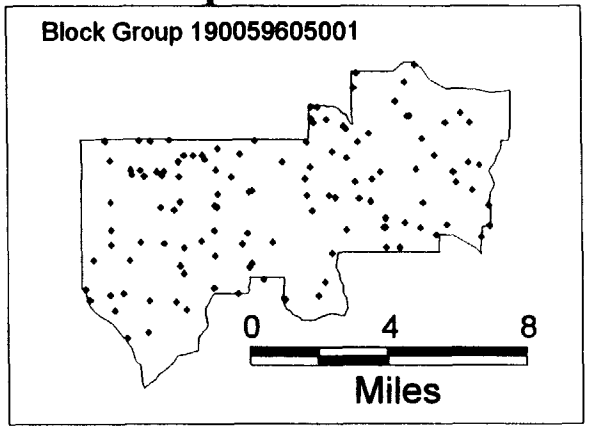


New BCPM

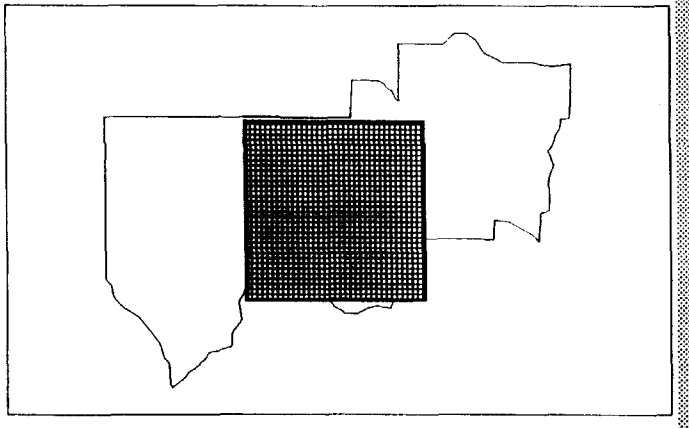
Any Representation of data is for illustrative purposes only.

BCPM Enhanced Customer Location

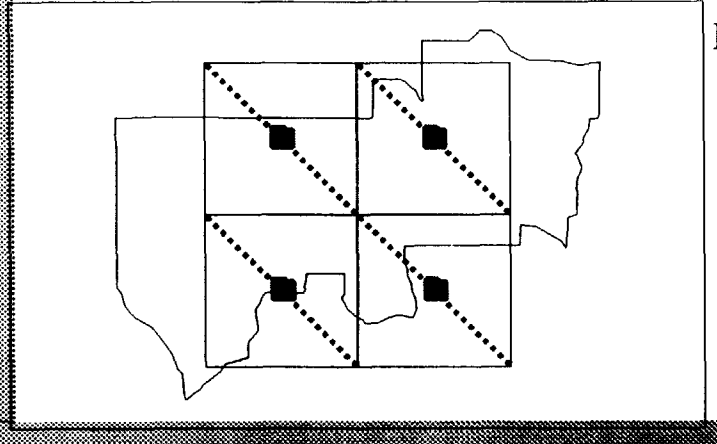
- Comparison of BCPM1.1, HM3.1, And Enhanced BCPM



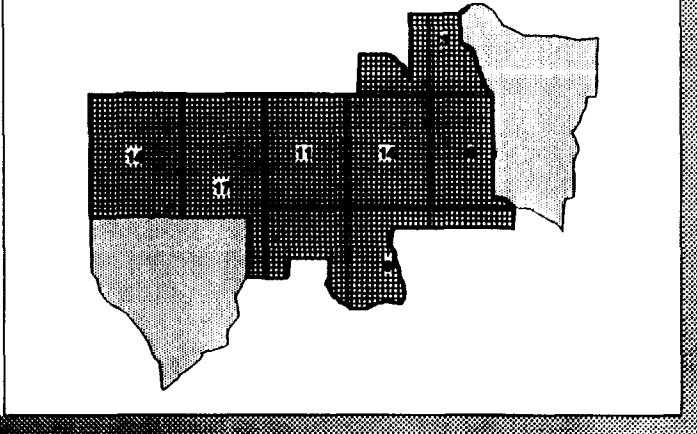
Satellite



BCPM1.1



Hatfield



New BCPM

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BCPM DATA SPECIFICATIONS
GIS DATA

Grid Dimensions

- Grid Dimensions have been set.
  - The largest grid will be 1/25 of a degree Latitude and Longitude in size or approximately 12,000-14,000 feet per side
    - This was done to comport with engineering constraints that the maximum copper distribution run can be no longer than 12,000 feet. If, due to placement of the DLC site or re-aggregation[1] of partial grids, the length of a distribution run exceeds 12,000 feet, cable gauge adjustments may be made.
  - The smallest grid will be 1/200 of a degree Latitude and Longitude or approximately 1500 ft
  - Quadrants will be created within each Grid about the Road Centroid point
    - The quadrants will be made up of the 1/200 grids whose road centroids fall within it
    - Road Segments, Households, Housings Units, Multiple Housing Unit data, and Business data will be required in each quadrant
    - In addition, Road Centroids and Road Reduced areas in each quadrant are requested

Census Block to Grid Apportionment

- The goal of this process is to allocate the Census data of each Census Block into grids. This is accomplished by partitioning each Census Block into all of the 1/200 Grid cells that it falls over.
  - For Census Block less than 1 square mile, the apportionment will be done on land area.
    - For example, if the Census Block falls over 2 grids equally, the Census Block data will be split 50/50 into the two grids.
  - For Census Blocks larger than 1 square mile, the apportionment will be based on a relative road segment length basis.
    - For example, if the Census Block falls over 10 grids and one of the Grids contains 80% of the road length, the grid will be assigned 80% of the Census Block data.
- Any Census Block that falls into un-served LEC territory will be excluded from the BCPM data. However, this data will be output into a exception report for viewing.
- Any Census Block without Households or Business lines will have all of its data excluded before processing.
  - This implies that Road Information will be discarded.

[1] Re-aggregation is defined as the combination of smaller grids to form larger grids.

Grid Aggregation Routines

- Once the Census Block data has been partitioned into 1/200 grids, the Grids will be either output as a single Engineering area or re-aggregated.

- Grid Aggregation algorithms have been modified to comply more closely with CSA-DA engineering guidelines

- **Grid Aggregation general rules**

Note:
For the rules, please refer to the following terminology
Grid = 1/25 degree Latitude/Longitude Grid
1/4Grid = 1/50 degree Latitude/Longitude Grid
1/16Grid = 1/100 degree Latitude/Longitude Grid
1/64Grid = 1/200 degree Latitude/Longitude Grid

If any grid has <1000 HU then output;

Of remaining data,
If any 1/64 grid > 400 HU then do:
If Grid - 1/64 grid < 400 HU then Output Grid;
Else If 1/4Grid - 1/64 grid < 400 HU then Output 1/4Grid;
Else If 1/16 Grid - 1/64 grid < 400 HU then Output 1/16Grid;
Else Output 1/64Grids (all 4);

Of remaining data
If any 1/16 grid > 400 HU then do:
If Grid - 1/16 grid < 400 HU then Output Grid;
Else If 1/4Grid - 1/16 grid < 400 HU then Output 1/4Grid;
Else Output 1/16Grids (remaining 4);

Of remaining data
If any 1/4 grid > 400 HU then do:
If Grid - 1/4 grid < 400 HU then Output Grid;
Else Output 1/4Grids (Remaining 4);

Clean up
If any record has < 100 then Merge with horizontal or vertical similar Grid (1/4 and ¼ or 1/16 and 1/16, etc..) of equal or larger size to which the road centroid leans
Partial grids less than 1/5 of a large grid will be aggregated back in (as long as line count is less than 100) to the grid along the longest edge.